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## WORKING PAPER SERIES

**Vilfredo Pareto's correspondence as a significant source  
for the knowledge of his economic thought**

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Working paper No. 12/2005



Università di Torino

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## **1. Introduction**

No archives of Vilfredo Pareto exist, to the best of our knowledge, beside the small collections kept at the Cantonal University Library of Lausanne and at the National Library of Florence that mostly consists of already published writings<sup>1</sup>. In the current research, by 'archives' we mean Pareto's letters that have so far been published in the collection of his *Œuvres Complètes*<sup>2</sup>.

The elements of theoretical or applied analysis that can be found in the correspondence of an economist of the past are not necessarily negligible. They can consist of, for example, introductory discussions to the theories (which can assist in determining how the author's intellectual work actually took shape); first drafts of the theories (from which it is possible to gauge the elaboration the theories underwent before reaching publication); and free comments on the reactions triggered by the theories. In Pareto's case, we are integrating these elements with the analytical elements that are present in his volumes and articles, as well as with the relevant part of the vast secondary bibliography and with the history of the events and ideas of his time. These elements have been detailed in the Paretian intellectual biography that we have been preparing for some years.

Thus, the question needed to be asked how we should present the analysis of Pareto's correspondence, which includes nearly 5,000 letters, in a sufficiently interesting way for those economic historians who are not scholars of his work. As a solution, we have chosen to divide the results according to three themes: Pareto's conceptions of science, economic theory, and economic politics. We have also tried to indicate the connections among these themes and to develop them in chronological order—unless this approach was threatening to obscure their logical reconstruction, in which case we have followed the latter criterion.

## **2. Elements of Pareto's conception of science**

As is known, the studies on Pareto's epistemology are still in their infancy. This is probably because today's epistemological schemes are ill suited to the quite different and temporally remote epistemological conceptions—that also have to be reconstructed—on which Pareto was drawing. In addition, the elements that Pareto himself provides about his epistemology are scattered in his chaotic and monumental scientific production, although they can be found in his correspondence.

### **2.1 Delimitation of scientific activity**

Traces of Pareto's critical reflection on the characteristics of scientific activity can already be found in his earlier letters, where his thought is inspired by the study, for example, of John Stuart Mill's *System of Logic* (that in 1874 he read in its 1866 French translation)<sup>3</sup>; of Buckle's *History of English Civilization* (probably read in its 1865 French translation)<sup>4</sup>; and of *The principles of psychology* by Spencer (probably read in its 1874 French translation)<sup>5</sup>.

Pareto believes that all that can be known are the phenomena, which he sees as "facts and relationships of facts"<sup>6</sup>. With regard to these phenomena, he believes that by following the crucial example given by the natural sciences, one can only determine "*how* they happen, and not *why*"<sup>7</sup>. All this leads Pareto to proclaim himself "the most positivist of positivists"<sup>8</sup>. It should thus be noted that he will always regard as *self-evident* the notion of "facts". Therefore, he will never see the deriving distinctions between the agent that studies and the reality that is studied as problematic. Nor does he see as problematic the distinctions between the study of subjective phenomena, which he understands as those "that take place in the minds" of people, and the study of objective phenomena—that is those "that take place outside" human minds<sup>9</sup>.

One should also take into account that there exist two categories of phenomenal relationships. If fact A acts on fact B and fact B does not act on fact A, "one can, if one wishes, call A the cause and B the effect". If fact A acts on fact B and fact B reacts on fact A, instead of a relationship of cause and effect there is a relationship of interdependence, as can very frequently be observed in the economic and sociological phenomena of a continuous kind<sup>10</sup>. Interdependence (a concept that Pareto borrows from Spencer<sup>11</sup>) can only be dealt with through mathematical logic<sup>12</sup>.

Pareto also thinks that phenomenal (*alias* experimental, *alias* scientific) knowledge is only relative<sup>13</sup>, in the sense that every proposition it arrives at (including pure logic propositions) is only valid "within the space and time limits that are known to us"<sup>14</sup>. His research programme, partly realized through his *Trattato di sociologia*, therefore also presented to the social sciences the concept of relativity that was gradually introduced in the natural sciences by Galileo and Copernicus, and later followed by Newton, Poincaré and finally Einstein<sup>15</sup>.

According to Pareto, since the human mind is "always the same", the knowledge of the history of natural sciences is extremely useful for the purpose of scientific studies. This is because by showing us the ways (at all times inevitably similar) in which the sciences have developed in the past, it lets us know how the new sciences will develop<sup>16</sup>—though generally through an increasingly minute (and inevitably arbitrary) subdivision of their topics<sup>17</sup>. Furthermore, such a history also shows that observation and theory alternate at the forefront of scientific development, as is necessary because "observation without theory is empiricism", whereas "theory without observation runs the risk of being mere imagination"<sup>18</sup>.

Finally, with regard to science, Pareto opposes metaphysics, which he always criticizes in disparaging terms<sup>19</sup>, and which he envisages as going from the name to the thing that the name designates. In metaphysical arguments, a thing consists of a "nebula of sentiments"—such as "good, evil, the beautiful, right, wrong"—which have never been able to be defined, and, consequently, the discussions on such confusing topics have no resolving criteria and are therefore fatally inconsistent<sup>20</sup>.

## 2.2 Modalities for carrying out scientific activity

As just mentioned, it is language that allows an explanation of the phenomena investigated. Thus, only those expressions that correspond “in a rigorous and precise way to some real objects” can be used<sup>21</sup>. This refrains from the belief that words are “the things themselves” and not merely some signs of them<sup>22</sup>—insignificant in themselves<sup>23</sup>. Natural sciences are the “only sciences worthy of such a name” precisely because they are the only sciences that have been able to connect facts, whereas the self-styled moral sciences only connect ideas<sup>24</sup>. In the absence of such a correspondence between facts and ideas, one can only admit postulates, but with the condition that the consequences that are inferred from them be verified by experience, as is the case with Euclid’s postulate<sup>25</sup>.

Scientific investigation can be carried out in two ways. Through mathematics, formal errors of reasoning are avoided. The other, the experimental method, is the method of the natural sciences, which is different from the empirical method because it studies all the known elements of the phenomena and is not satisfied with investigating them all together<sup>26</sup>. This allows the grounding of the scientific propositions in those “positive and real” premises, without which they would end up meandering in the realm of metaphysics<sup>27</sup>. More precisely, while mathematics is a type of logic drawn from experience, which makes it possible “to undertake lines of reasoning that are too long and complex”<sup>28</sup> to be developed verbally, the experimental method is the method that goes from things to names<sup>29</sup>. In actual terms, this method, which is even more powerful than self-observation<sup>30</sup>, consists in directly observing “the facts”<sup>31</sup>—that is, the real entities, people and things—that have an infinite number of properties that science cannot but study separately<sup>32</sup> and through successive approximations<sup>33</sup>. On the one hand, this implies that it will not be possible to have the complete theory of any phenomenon but only the causes that give its “main part”<sup>34</sup>. On the other hand, for the purpose of the positive or normative application of scientific results to reality, it will be necessary to take them all into consideration—that is, it will be necessary to make a synthesis of them<sup>35</sup>.

Pareto will never accept any approach that sees the recourse to mathematics as an alternative to the experimental method. Moreover, if the case arose, he would not hesitate to abandon mathematics altogether “because in all physical sciences the experimental method is sovereign”<sup>36</sup>.

Scientific work arrives at identifying natural laws, that Pareto ended up thinking of as simple uniformities, of the kind phenomenon A accompanies phenomenon B, and, as such, devoid of any aspect of necessity<sup>37</sup>, which at first Pareto also had assigned to them<sup>38</sup>. Therefore, in order to explain a fact one needs to show that it accompanies other facts<sup>39</sup>. In this sense, the experimental method makes it not only possible to explain the past, but also, and above all, to foresee the future<sup>40</sup>.

Finally, the scientific propositions into which scientific laws are formally expressed are of two kinds: descriptive (“oxygen is a gaseous body”) and hypothetical (“if oxygen is combined with hydrogen, water is produced”)<sup>41</sup>.

## 2.3 Scientific truth

Since his youth, Pareto believed that the truth of a doctrine depends only on its intrinsic characteristics and never on the number of its supporters, since it has been amply demonstrated that no error has ever existed that has not found a majority of supporters<sup>42</sup>.

Later, he places the term ‘truth’ among those that are obscure to him. He manages to define it—obviously only within experimental knowledge—as the coincidence between the two only existing “orders of phenomena”: the interior (i.e. psychological) order and the exterior order<sup>43</sup>. More precisely, truth is only “an agreement between experience and thought”<sup>44</sup>.

At first, Pareto deems an interesting test of the truth of a doctrine to be the number of critical arguments that the doctrine has succeeded in rebutting<sup>45</sup>. However, he later realizes that such a method is erroneous because it is possible to oppose refutable arguments to a theory that, contrary to our impressions, is false<sup>46</sup>. This observation will lead him to be generally satisfied with considering a scientific doctrine “as good, until someone proves it false through reasoning or through facts”<sup>47</sup>.

## 3. Pareto’s conception of economic theory: methodology, contents and limitations

It is in Pareto’s conception of science—of which we have reconstructed the elements that are present in his correspondence—that his approach to economic theory must be placed.

The first important reference Pareto makes to economic theory is found at the end of 1888. He regrets not having yet carried out his project to write a treatise on “*rational* political economy”, which, following the example of rational mechanics treatises, he envisages as the clearest and most concise possible exposition, feasible only through mathematics<sup>48</sup>, of the “general principles of economic science in their most general aspects”<sup>49</sup>. The first book he quotes as coming close to such a treatise is *Les lois naturelles de l’économie politique* by the French-Belgian économiste Gustave de Molinari<sup>50</sup>.

However, on the eve of Pareto’s professional approach to political economy two years later, it seems to him that the elements that he considers to be the fundamental variables of an economic system (population, taxes, public debt, foreign trade etc) can be correctly evaluated only in relation to the trend of the system’s wealth, even though the available statistical data are still very imperfect<sup>51</sup>. He consequently deems Pantaleoni’s book, *Dell’ammontare probabile della ricchezza in Italia*, “the best study of political economy that has been published in Italy in many years”. Moreover, he will base the investigations he is thinking of doing on the Italian economy on this work<sup>52</sup>. He also greatly appreciates Pantaleoni’s article “Indice della variazione dei prezzi di importazione e di esportazione in Italia dal 1878 al 1889” (*Giornale degli Economisti*, May 1891) because he believes that “by following this path that it will be possible to make political and economic progress”. Furthermore, the growing wealth of economic knowledge of an empirical kind makes one hope that it will be possible to emulate Kepler, who availed himself of very precise observations and was finally able to calculate the orbit of Mars<sup>53</sup>. On the other hand, in the current state of affairs, he believes that pure political economy falls within the realm of

metaphysics<sup>54</sup>. As Auspitz and Lieben's self-styled demonstration shows, a country (Germany) obtains profits through protectionism, whilst "protection is a folly and a fraud ... an anti-economic regime" whose evils are unquestionable<sup>55</sup>.

### 3.1 The theory of exchange

The starting point of Pareto's economic theory studies is his reading (that took place in the summer of 1891) of Pantaleoni's *Principi di economia pura*<sup>56</sup>. In line with his aforementioned experimental conception of science, it seems to Pareto that its main topic—that is the theory of exchange—should set off from the "naked" fact that, for a quantity of good, everyone is prepared to pay what they reckon is its market price. Furthermore, they believe they have got a good deal if they pay a lower price, and a bad deal if they pay a higher price. They react to a possible increase by necessarily saving on other goods even though they choose them at random and not because of their lower degree of utility<sup>57</sup>.

Continuing in his analysis of hedonistic political economy, Pareto believes that the explanation it gives through the *homo economicus* hypothesis inevitably captures only one part of the reality (as the case of the infinite number of reasons for exchange indicates) because such a hypothesis implies that the trader is not only an egocentric, but also someone who acts on the basis of reasoning alone, or, above all, on the basis of habit, as demonstrated by experience. On the other hand, even if *homo economicus* were "very close to real man", this would not guarantee that hedonistic economics would achieve results "very close to the real ones" because a small difference in the causes can produce a very great difference in the effects<sup>58</sup>.

Pareto's first critical conclusion with regard to economic theory is therefore that hedonistic economics must proceed cautiously, always starting from experience and always being open to theoretical extensions, as was the case for theoretical mechanics<sup>59</sup>.

Pareto quickly realizes that the final degrees of utility of goods (not their total utilities, of which an individual is never aware) actually govern exchanges<sup>60</sup>. However, he is left with the crucial doubt of not knowing how to measure them: a doubt which had originally led him to think of starting his study of exchange from the better known curves of supply and demand<sup>61</sup>. More specifically, Pareto cannot accept the hypothesis of continuity of consumption, since it is disproved by the common experience of consumers<sup>62</sup>. Nor can he accept the hypothesis of the coincidence of the final degree with the last quantity consumed, since it is disproved by the case of short-term speculators, who do not consume, but whose activity is decisive in the formation of the prices<sup>63</sup>. The generality of the hypothesis of the decreasing of the final degree of utility is also unacceptable, since it is disproved by various empirical counter-examples<sup>64</sup>. Furthermore, maximum pleasure, which is another fundamental concept of hedonistic economics, is a situation that traders do actually achieve, but without being able to predetermine it. The consequence is such that the exchanges are likely to oscillate around the point of maximum pleasure. He believes that this is a trend that must be demonstrated anyway, thus necessarily paving the way to a new, dynamic branch of hedonistic economics<sup>65</sup>.

Pareto takes all these cautions into account and critically analyses the two available conceptions of the final degree of utility. According to the first and very general conception, the final degree

of utility depends on all the circumstances affecting it, which, by leaving the final degrees of utility “entirely undetermined”, renders “the fundamental theorem” of the proportionality of the prices to the degrees heuristically sterile<sup>66</sup>. If one accepts instead Wicksteed’s conception, according to which the final degree is defined, once a consumer and a good are given, the aforementioned theorem increases our knowledge. This is even though one is not able to measure the final degrees, and even though, as it happens on the stock exchange, for example, share prices depend also on their variation in time<sup>67</sup>.

Thus, Pareto ends up accepting hedonistic economics, although only provisionally, as long as one is prepared to admit that its fundamental hypothesis of a continuous and always decreasing degree of utility is susceptible to empirical refutations<sup>68</sup>. If one accepts this hypothesis, mathematical economics, and only mathematical economics, is able to demonstrate<sup>69</sup> that the demand for a good is a decreasing function of the price, whereas when the price rises, the supply starts by increasing and then decreasing<sup>70</sup>.

At any rate, since, according to Pareto, the economic problem continues to lie in the assessment of how a provision affects people’s welfare, its solution entails the need to measure that welfare. Finally, since it has not been demonstrated that this welfare “is a quantity”<sup>71</sup>, Pareto believes that the difficulty can be avoided<sup>72</sup> by making use of an index that “clearly” distinguishes a greater welfare from a lesser one<sup>73</sup>.

While only admitting this idea as a postulate, Pareto has indeed no doubt that every human being, when put in front of two states of welfare (each deriving from a different combination of goods), is able to say whether he deems them equal, or one greater than the other<sup>74</sup>. Without worrying about the reasons behind the received answer<sup>75</sup>, this makes it possible to trace the lines of equal welfare (or of equal pleasure)<sup>76</sup>; that is, the “lines of indifference”<sup>77</sup> (that Pareto generally shows with a negative incline, but also illustrating the situation that will be later defined of lexicographical arrangement<sup>78</sup>). Pareto ascribes this concept to Edgeworth—although he stresses that the latter derives it from the hypothesis of the final degree of utility—whereas in Pareto’s opinion it is a “direct product of experience”, which constitutes the new starting point of pure economy<sup>79</sup>.

According to Pareto, the analytical evolution that leads him from the final degree of utility (redefined ‘ophelimity’ in his *Cours d’économie politique*) to the index of ophelimity in the *Manuale di economia politica*, and finally to the index-function of the *Manuel d’économie politique*—which only indicates “in which direction the individual will move”—constitutes a progress because it allows one to replace “rather metaphysical concepts” with “ever more exclusively experimental concepts”<sup>80</sup>.

### **3.2. General economic equilibrium**

It is interesting to note that, though Pareto does not follow “all the publications of mathematical journals”<sup>81</sup>, at the beginning of the century, he thinks that mathematics, “with the reason, or the pretext, of rigour”, is by now only searching for fine points. At any rate, for its applications, which include political economy, “the ancient science”—as exemplified by the first three volumes of Jules Houël’s *Cours de calcul infinitesimal*, published in Paris by Gauthiers-Villars in

1878–1881, and by the seven volumes of Hermann Laurent’s *Traité d’analyse*, published in Paris by Gauthiers-Villars in 1885–1891—is still “always exclusively” sufficient<sup>82</sup>. On the other hand, in an economist’s training, the study of mathematics is of secondary importance; what is necessary is “to study social sciences as one studies natural sciences”, and in order to do so, one must rid oneself “of metaphysics, of sentiment” and follow experience as the only guide<sup>83</sup>. Furthermore, mathematical economics, based on the aforementioned mathematical foundations, deals with matters that are quite different from the laws of supply and demand<sup>84</sup>.

Generally speaking, mathematical analysis is of little use in political economy if it is applied to specific, numerical problems, such as the calculation of single prices or the study of the final degree of utility<sup>85</sup>. It is, instead, of great use if it is applied to general, qualitative problems, such as, mainly, the identification of the conditions determining general economic equilibrium (GEE), which allows the expression of the “interdependence” of the economic phenomena<sup>86</sup> through the concept of equilibrium (initially considered by Pareto as “a fact”<sup>87</sup>, and later simply as an analytically useful abstraction<sup>88</sup>). In fact, the use of mathematics in political economy is only justified for the purpose of solving the problem of GEE<sup>89</sup>, from which it is wrong to think of drawing practical applications<sup>90</sup>, which implies that there will probably never be the need “to solve any economic equation numerically”<sup>91</sup>.

It is by following the experimental methodology outlined above, and in particular its suggestion that there is no single cause to social and economic phenomena, but they are interdependent<sup>92</sup>, that Pareto arrives at choosing GEE. Auspitz and Lieben’s analyses of partial equilibrium, like those by Launhardt and Cournot, do not take into account either the reductions and the suppressions of consumption induced by customs duties, or the fact that often the protected companies earn much less than the customs authority. On the contrary, Walras’ GEE succeeds in accounting for these complications of international trade<sup>93</sup>, though without matching the clarity and accuracy of exposition of Cairnes’ theory of international commerce<sup>94</sup>, which Pareto somehow wishes to update with his article “Teoria matematica del commercio internazionale” (*Giornale degli Economisti*, April 1895) that indeed shows a theory of international trade reformulated “with Walras’ formulae”<sup>95</sup>.

By putting together exchange and production, GEE gives an overall, albeit inevitably approximate, representation of the economic phenomenon and will be defined by Pareto as the problem of identifying “what the actions of the people will be”, “given the tastes that people have and the obstacles they encounter in order to satisfy them”<sup>96</sup>. Moreover, the question of GEE consists in studying the way in which economic goods are distributed in a community of individuals who are “entirely similar”—not only from a physiological point of view, but also in terms of their income and the quantities they own. GEE is based on the solution of the problem of the choices made by one single individual, which is a problem that in the end can be reformulated without making use “either of ophelimity, or even of prices”<sup>97</sup> because they “are a result of the position of equilibrium and do not determine it”<sup>98</sup>). Therefore, as far as theory is concerned, “it would be better always to discuss one single individual”, leaving the study of GEE for social classes to the practical applications of the theory<sup>99</sup>.

In this way, the theory of free competition—that is, the case of constant prices—is only a part of the theory of GEE, and it allows one also to consider variable manufacture coefficients and



prices<sup>100</sup>. That which gives “the conditions for mechanical equilibrium and for economic equilibrium (which is similar to the former), as it does in general for all kinds of equilibria”<sup>101</sup> is the equation of virtual velocities. And the representation of GEE given in the *Manuale di economia politica* is such that it brings “the theory [closer] to the facts”, since it is more general than previous representations<sup>102</sup>.

In 1907, while somehow taking stock of his investigations on GEE, Pareto deems the study of static GEE as still being in its infancy. This is despite the fact that it is “much less difficult” than dynamic GEE<sup>103</sup>, the study of which one will only be able to start after finding out “what relation exists, in economics, between force and acceleration”<sup>104</sup>. The progress of static GEE depends, instead, on the ability to solve its system of equations, or at least to study the properties of the solution for particular forms of the ophelimity function; for instance  $\varphi(x)=A/x^\alpha$  or  $\varphi(x)=A_0+A_1x+A_2x^2+\dots$  where the conditions  $\varphi_x>0$ ,  $\varphi_{xx}<0$ ,  $\varphi_{xxx}>0$  are satisfied<sup>105</sup>.

An important development of Pareto’s GEE is the economy of welfare. It is interesting to note that, at first, the principle of the incomparability of the final degrees of utility, on which Pantaleoni insists so much, does not make an impression on Pareto. Indeed, like all other sciences, the science of economics is a science of averages. It is therefore crucial, for hedonistic economics, to find an average final degree of utility. This can be calculated if the demand is known<sup>106</sup>, since the demand for a good is a function of the final degrees of utility of its consumers—possibly starting from the family budgets of Le Play’s school<sup>107</sup>. However, this research programme is soon abandoned in favour of the one that will lead to the well-known, innovative definition by Pareto of economic optimum.

Pareto has never been in any doubt that the total ophelimities of the individuals 1,2,3... $\Phi_1$ ,  $\Phi_2$ ,  $\Phi_3$  ... are heterogeneous and therefore cannot be added up. If one varies the quantities of goods consumed by the individuals, it will be possible to group the ensuing variations  $d\Phi_1$ ,  $d\Phi_2$ ,  $d\Phi_3$  ... in two cases. In the first case, some of them are positive and some are negative (which is, in other words, the situation from which it is not possible to move while at the same time benefiting all the members of the community<sup>108</sup>). In the second case, they are all positive or all negative. It is “only in order to give a name to the first case” that Pareto called it “maximum of ophelimity”, and the continuation of his analysis consisted only in finding the quantities of goods corresponding to that maximum. He solved the problem by dividing every variation of individual total ophelimity by the individual marginal ophelimity of a single good (good  $x$ , for instance)  $\phi_{1x}$ ,  $\phi_{2x}$ ,  $\phi_{3x}$  ... In this way he obtained the individually consumed quantities of  $x$ ,  $d\Phi_1/\phi_{1x}$ ,  $d\Phi_2/\phi_{2x}$ ,  $d\Phi_3/\phi_{3x}$  ..., which are homogeneous quantities and can therefore be added up<sup>109</sup>.

### 3.3 Pareto’s criticism of other economists

The rigorous consideration of the economic phenomenon in terms of GEE is also the characteristic that, according to Pareto, distinguishes “the new theories from the ancient ones”<sup>110</sup>. Goods and labour prices, the interest rate, and the rents of the various capitals are indeed unknown facts that are simultaneously determined by a system of equations in which some parameters also appear: one can therefore say that the facts are determined by all such parameters<sup>111</sup>. Non-mathematical economists, instead, were and still are looking for the parameter that determines the single unknown fact, which does not make sense<sup>112</sup>: the demonstration of the

cognitive error of literary economics is, according to Pareto, one of the most important results of the application of mathematical economics<sup>113</sup>. The main difference between Pareto's economics and Austrian economics lies precisely in the fact that the latter still admits a cause for value. Pareto does not agree with this, for the very reason that the exchange value one observes on the market depends "on all the economic circumstances of barter, production, and capitalisation"<sup>114</sup>.

On the other hand, the distinction between economic schools must not be based on the use of mathematics (the knowledge of which is necessary but not sufficient in order to write about mathematical economics<sup>115</sup>), but on the "more or less extensive [use] of the experimental method"<sup>116</sup>. As a consequence, Pareto feels as distant from Walras as he does from Edgeworth and Marshall (of whom he notes the inability to "get an idea of economic equilibrium"<sup>117</sup>, while always giving incomplete solutions of the economic problem<sup>118</sup>). Although making use of mathematics, the latter two consider economics as "an art mixed with metaphysics, that leads towards the ideal they have set themselves"<sup>119</sup>. According to Pareto, however, the scientific evolution of economics is characterized precisely by the disappearance of practical and ethical considerations<sup>120</sup>.

Initially, Pareto had credited the three abovementioned economists, together with Gustave de Molinari (though disagreeing with the latter's dislike for pure economy)<sup>121</sup>, with being his teachers<sup>122</sup>. The reconstruction of Pareto's relationship with Walras, as shown by his correspondence, is quite interesting. We do not know when, but Pareto's first reading of the *Elements d'économie politique pure*<sup>123</sup> had been interrupted because of the disgust caused to him by its "metaphysical part, which is so large in it". Pareto's subsequent reading of Pantaleoni's *Principi* had instead indicated to him that in Walras' work "there was something other than metaphysics", thus prompting him to read the *Elements* again and to find in them "a very important theory, namely the theory of economic equilibrium"<sup>124</sup>.

Once he has learnt about Walras' pure economy, judging that for the moment there is little to add to it, Pareto decides to do some applications of it, both to convince the public of the utility of the mathematical method in economics, and to pave the way for further developments of pure economy itself<sup>125</sup>. One of the applications is the clarification that Walras' proposition, according to which it is necessary to take into account the utility of all the goods, implies that the final degree of utility of money cannot be considered as constant, since it varies when the price of any one good varies and when the available goods vary<sup>126</sup>. Pareto also believes that Walras gives little importance to the question of the *raretés moyennes*, even though in his own monetary theory there is a *rareté moyenne* of gold<sup>127</sup>. Finally, the "perfect competition", as discussed by Walras, seems to Pareto to be just an extreme case that does not prevent one from taking into consideration, as suggested by Edgeworth, "the obstacles to competition", thus giving rise to the study of the "imperfection of competition"<sup>128</sup>.

On the other hand, Pareto immediately finds a point on which he disagrees with Walras: as a staunch supporter of the experimental method, contrary to his interlocutor, Pareto will never hesitate to modify or abandon a theory if it does not agree with experience<sup>129</sup>.

And, with their personal proximity in Lausanne, it quite quickly emerges that Pareto and Walras are scientifically poles apart<sup>130</sup>, since Pareto limits himself to study "that which is", refusing to

study, as his predecessor, “that which should be”<sup>131</sup>. More precisely, Pareto believes that, even in discussing social and moral sciences, one must clearly distinguish the postulates from their consequences and from the facts of experience. Walras, instead, does not linger on his postulates, which many would not accept, or even leaves them unexpressed, while dwelling at length on demonstrations that are “extremely easy as soon as the postulates are accepted”<sup>132</sup>—in particular, the postulate of the positive effects, in social terms, of a wider role for the State<sup>133</sup>. By refusing to follow Walras “in his metaphysical ramblings”, Pareto ended up by making an enemy of him<sup>134</sup>.

The only point they have in common remains therefore “a rather secondary question for social sciences”<sup>135</sup>, such as the representation of GEE through mathematical formulae<sup>136</sup> for the case of free competition alone<sup>137</sup>. Pareto could have represented GEE in a different form from Walras’, but he gave it up in order fully to acknowledge Walras’ merit in clarifying to him the concept of GEE<sup>138</sup>, to which he just added the “idea of successive approximations”, in order to eliminate “the too abstract aspect of Walras’ doctrines”<sup>139</sup>.

### **3.4 Relation between political economy and sociology**

As mentioned above, Pareto feels that, all things considered, political economy is showing little progress. He thinks that this is mostly due to the circumstance that, even though the GEE theory is a special case of the theory of social equilibrium<sup>140</sup>, political economy does not take into account the connections between the economic and the social phenomenon<sup>141</sup>.

Once one has differentiated between logical actions (i.e. those that directly depend on logic<sup>142</sup>) and non-logical actions (i.e. those that depend on sentiments<sup>143</sup> and are, for most people, much more numerous than the former)<sup>144</sup>, social science or sociology should move on and classify the heterogeneous forces that affect people’s will into categories (sentiments of sensual pleasure, moral sentiments, sentiments of justice, religious sentiments, without speculating what these sentiments are, or, as Spencer does, from where they come), and find out the resultant of each of those categories. Such a work of synthesis of facts is very difficult, but Pareto wants to try to accomplish it, since he rejects the easy alternative of adopting a metaphysical system<sup>145</sup>.

Social science will consist of two parts<sup>146</sup>. The first part will be a rational ethics that can only be built from postulates, from which precepts must be drawn for human actions: it is a discipline Pareto is not interested in, not because he despises it, but because no fundamental postulates exist for it, and he is not able to determine them<sup>147</sup>. The second part, which is the part Pareto studies, will consist in the description of the manifestations of the social activity of the people and in the identification of the social variations corresponding to the psychological variations—that is, the variations of the moral and religious states—of the individuals.

Since the times of his liberalist campaign, which will be discussed below, Pareto had guessed that concrete economic phenomena could only be understood by combining their study with the study of the other social phenomena<sup>148</sup>. He would have started such a combined study of economics and sociology much earlier, if he had earlier understood, also in practical terms, that experimental study must only be founded on principles that are “given by experience”. This approach was

precluded to him by his “blind” acceptance of “some ethical principles” that were present in the society in which he lived<sup>149</sup>.

#### **4. Pareto’s conception of economic politics: positive and militant aspects**

It seems to us that Pareto’s entire theoretical-economic thought is largely directed to the clarification of the political phenomenon in general, and of the political-economic phenomenon in particular, not only with positive goals, but also, at least for a certain period, with militant motivations. We thought therefore that it would be of some interest to gather all the materials on his political-economic thought that have been extracted from his correspondence, under the topics of Pareto’s liberalist militancy and his conceptions of liberalism, socialism and the problems of practical economic policies.

##### **4.1 The course of Pareto’s liberalist militancy**

At least until his *Cours*, Pareto’s theoretical thought is certainly directed towards supporting his liberalist militancy, which is founded on his early, profound and vivid adhesion to the general principles of liberalism.

Indeed, already in the first documents that record his thought, Pareto—who will later attribute this attitude to sentiments innate to him<sup>150</sup>—supports all individual liberties, including freedom of conscience. However, he stresses that they are often misinterpreted, in the sense that they are defended by individuals who only invoke them for themselves, ignoring the fact that partial freedom is indistinguishable from oppression<sup>151</sup>. This observation leads him apodictically to affirm that to be liberal means to be on the side of the oppressed against the oppressor, whoever either of them may be<sup>152</sup>.

In an early exemplification of this concept of freedom, Pareto states that he has no doubt about “the justice and utility of freedom of trade”<sup>153</sup>, pointing out that in the relation between “capital and labour” there are only two ways of organizing things. If the State wishes to regulate the price of work, then it gives the workers the right to demand that it also regulate the price of the goods they buy, which leads to socialism. On the contrary, one has the system of freedom if the State leaves the citizens free to deal with each other: this situation includes the freedom of trade union association, without which the workers would have their wages imposed to them<sup>154</sup>.

The first liberalist economist called upon by Pareto is Francesco Ferrara, author of the important article “Il germanesimo economico in Italia” (*Nuova Antologia*, August 1894), that Pareto deems well written, although he is not impressed by the harsh tones Ferrara uses against his opponents. Such tones are even less justifiable, given the role that, as Minister of Finance, in 1868 Ferrara had in introducing the tax on milling, which was illiberal, since it was not proportional<sup>155</sup>.

Similarly, and in the same period, the conservative character of the arguments in favour of economic freedom put forward by the Florentine jurist Odoardo Luchini gives rise in Pareto to the temptation, which he says was swiftly and forever conquered, to cross to the side of the socialists of the German Historical School<sup>156</sup>.

And, after having frequented the fundamental Florentine group of the historic right for ten years, Pareto ends up by realizing that his coherently intransigent conception of liberalism<sup>157</sup> is by now only followed by a small and combative opposition party—the radical party—with which he sympathizes from the mid 1880s<sup>158</sup>. He only sees it as a lesser evil<sup>159</sup>, though, within a strategy of “compromising on the means” in order only and always to pursue the aim “of having minimal government action, of getting away from the clutches of the people who bleed the country dry”<sup>160</sup>.

Thus, he fights the customs duties imposed by Crispi in 1888 from the very time they are proposed<sup>161</sup>. He does this in a fashion that he acknowledges as being “passionate” but fair, since such a new customs policy consists in the appropriation, by the agrarians and the government, of other people’s property, in particular the property of poor citizens<sup>162</sup>. Pareto intends to quantify<sup>163</sup> the extent of this appropriation on the basis of the conviction that the custom duties are wholly transferred onto the national price, allowing the national producers to collect a sort of private levy equal to the customs duties multiplied by the national production<sup>164</sup>. Consequently, in the summer of 1891, he goes to Geneva and Lausanne, not only, and not so much, to meet Walras in person<sup>165</sup>, but also in order to study the Swiss tax system, in an unfinished attempt to carry out an international comparison of the weight of taxes and customs protectionism<sup>166</sup>.

Pareto shares the thesis of the leader of French liberalism, Gustave de Molinari, that the best the liberals can do is to give all social classes the political and economic education they lack, which is the source of “nearly all the evils of society”<sup>167</sup>. However, Pareto criticizes the liberal economists (whom in this period he regards as the economists *tout court*) because he considers them “too bland to the powers that be, too lavish of excuses for the monopolies, too uncaring of the people’s good”<sup>168</sup>, whereas he wishes to invoke the theorems of classic political economy precisely “against the oppression by the upper classes”<sup>169</sup>. In Pareto’s intentions, the course of political economy that he conducts in Lausanne from the summer semester 1893—which includes one semester of pure economics and three semesters of applied economics<sup>170</sup>—is therefore initially meant to be the exposition (without recourse to mathematics<sup>171</sup>) of the “scientific principles of economic freedom”, in the hope that some student may wish to teach them in turn<sup>172</sup>.

At any rate, Pareto acknowledges that the liberalists find themselves in the awkward position of attacking the interests of the small, but aggressive protectionist minority, while defending the interests of a majority who, through ignorance, is unappreciative to them of such battles<sup>173</sup>, which will lead to the victory of economic freedom only in a still distant future<sup>174</sup>.

And at the end of the century, together with the bitter realization of the unstoppable decadence of the liberals’—and particularly of the liberalists’<sup>175</sup>—influence, Pareto acquires the conviction that his liberalist campaign has been perfectly useless<sup>176</sup>, considering that he has finally realized the primordial fact that “man is an evil beast” for his vices, his ignorance, and his prejudices), and that he will continue to be so for centuries to come<sup>177</sup>. Such a disenchanted attitude towards freedom emerges in Pareto in the wake of the Dreyfus affair, which gives him the opportunity to observe how the *dreyfusards*, having won their battle, use the same evil methods against their opponents that the French reactionnaires had used against Dreyfus<sup>178</sup>. Pareto conceptualises the incident in the sense that only a minority, of which he has so far partaken, follow the principles of

liberty, while the majority simply follow their own interests, which is a situation that the liberal governments have contributed to create naïvely<sup>179</sup>.

From all these considerations Pareto draws the conclusion that, since it is impossible to change “the nature and the custom of men”, it is preferable to let them “do, and serenely watch where they are going to end up”<sup>180</sup>; thus, it is better for him to abandon all participation to active political life, in order to devote himself “exclusively to science”<sup>181</sup>. In his following reflections on his, by now, past liberal militancy, Pareto deals with its lack of effectiveness, which he attributes to his not having understood that, in practical activities, knowing is often antithetical to acting. This is a subject that is synthesized in *Trattato di Sociologia* through the thesis of the “distinction between the experimental truth of a doctrine and its social utility”<sup>182</sup>.

#### 4.2 Theoretical foundations of free trade

Pareto’s correspondence gives ample indications about his efforts to clarify the theoretical foundations of the liberalism he militantly pursued, with the intuitive argument in favour of free trade that is given by the opportunity it affords to procure every product where it costs least<sup>183</sup>.

Pareto’s first in-depth reflection refers to a particular characterization of customs protectionism. National and international trade can be formally expressed through the ratios  $a_1/b_1, a_2/b_2, a_3/b_3, \dots$ , where  $a_n \dots$  is the quantity of products that producer  $A_n$  gives producer  $B_n$  in order to obtain the quantity  $b_n \dots$  of the latter’s products. The case of equal protection for all economic agents (including those who are not involved in international trade) consists in making all the  $a$ s and all the  $b$ s grow in the same proportion, with the consequence that the aforesaid ratios do not change. It is debatable whether such a kind of protection (different from the protection known so far, which makes only some of the ratios grow) is actually possible; but if it were, it would give the same results as free trade, which can be formally expressed precisely by using the series of ratios  $a_1/b_1, a_2/b_2, a_3/b_3, \dots$ , but also adding the expenses (which constitute a net loss for the country), in order to give to, and take from, all the agents the same profit increment<sup>184</sup>. From this line of reasoning Pareto draws the political suggestion, which he very soon drops, that the most effective way to tackle protectionism is to protect all social classes, starting with the workers<sup>185</sup>.

In the early 1890s, the main proposition of political economy appears to Pareto to be that not only do protective customs duties destroy part of the income of the protected country, but they also effect a redistribution of the remaining income. And it is precisely the latter effect that explains the persistence of protection. This is because those who are damaged by it, being many, only suffer a small individual damage, which they therefore tend to ignore, while the beneficiaries, being few, receive great individual advantages, by which they are motivated to be very active in trying to achieve them<sup>186</sup>. In the case of Pareto’s contemporary Italy, it was precisely in order to obtain such advantages that the protectionists (industrialists and landowners) made their members of parliament approve the military expenses proposed by the government to meet the terms of the Triple Alliance<sup>187</sup>. Thus, the truth of the thesis, according to which it is necessary to fight at the same time against “war and customs protection”—put forward by the more profound exponents of the liberal school, such as Spencer and de Molinari—is proved<sup>188</sup>.

But, in general, Pareto only considers *laissez faire* as “the lesser possible evil” for today’s civilized peoples. The only demonstration that free traders must give<sup>189</sup> is therefore that the alternative policies so far applied are worse than *laissez faire*. Such a system is not required to be the best for the peoples of all time and all places<sup>190</sup>. It also needs to be considered that if *laissez faire* could be demonstrated, it would not at all entail the willingness by the people to adopt it<sup>191</sup>. Nevertheless, Pareto devotes himself to the search for this demonstration. At first he simply states that the hedonistic maximum is obtained from free competition between capital and labour in the production of private goods and services, and from free competition between State and private entities in the production of public goods<sup>192</sup>. The subsequent study of the variations of welfare for the society when production coefficients vary, which materialized in the article “Il massimo di utilità dalla libera concorrenza” (*Giornale degli Economisti*, July 1894), is conducted by Pareto because, even though it is proved by very many facts<sup>193</sup>, it is by no means evident—as the socialists’ claim that such a welfare can be increased by changing the competition coefficients demonstrates—that the coefficients that maximize welfare are actually those obtained “by the competitive play of the entrepreneurs”<sup>194</sup>. With this article, in agreement with Walras’ opinion, Pareto hopes to establish the theory of free trade “on rational bases”<sup>195</sup>, and to demonstrate that the propositions of pure economics apply to any arrangement, with or without private property<sup>196</sup>.

After having specified that he is for economic freedom “as a means to achieve maximum utility for the people, and not to favour the wealthy”<sup>197</sup>, Pareto does not hesitate anyway to acknowledge that “free competition does not exist” yet<sup>198</sup>, whereas there exist “monopolies of all kinds” (established by the State<sup>199</sup>) that must be destroyed, in order then to see what will happen to society<sup>200</sup>.

### 4.3 Pareto and socialism

Throughout his life, Pareto follows the progressive establishment of the socialist movement. His evaluation of it is influenced by the early and empirical idea according to which the State’s economic ineptitude is demonstrated by its inability to “run well the industrial companies it has”<sup>201</sup>: an inability that is caused precisely by the absence of those incentives to efficiency and innovation that are provided by free competition<sup>202</sup>.

Furthermore, after specifying, in strong terms, that liberal economists are as interested in social problems as the socialists, and that they differ from the latter only because, contrary to the socialist approach, they require their solutions to be founded “on experience and logic”<sup>203</sup>, Pareto thinks, at first, that socialism is “an absurdity” if seen as the doctrine pleading that to each be given according to his needs; whereas if it is regarded as the doctrine arguing that to each be given according to his merits, it represents the goal that true liberals should pursue<sup>204</sup>. In fact, popular socialists (if they convince themselves that the revolution is only possible from a situation that is not of extreme poverty) and true liberals could join forces to overturn the current bourgeois socialism—that is, the use that the bourgeoisie makes of the State for its own interests<sup>205</sup>. Once they have succeeded and have therefore temporarily increased the people’s welfare, the alliance will dissolve, because the popular socialists will want to use the State to their advantage<sup>206</sup>.

Thus, Pareto opposes socialism because he deems it wrong in the economic part<sup>207</sup>, since, following his study of the facts<sup>208</sup>, he does not see how the State's responsibilities can be expanded (as indeed required by popular socialists) without “considerably” reducing the production of goods, and therefore without condemning to death by starvation a great number of human beings<sup>209</sup>.

However, such a tragic phenomenon would be a decisive factor in bringing about economic freedom, provided that the bourgeoisie finally decides to respect everyone's property<sup>210</sup>. In general, the owners of fixed and movable capitals have indeed always used them in two ways: the first way consists in using them for the production of wealth, and this has always been useful “to all men without distinction”; the second way involves using them instead to take possession of other people's riches, and this has always been “harmful to society”<sup>211</sup>. If the two uses cannot be disentangled, it is likely that it is the socialists who are right in demanding the abolition of ownership of capital. But if it is possible to prevent the latter use (that is, if it is possible “to prevent the rich taking goods from the poor”<sup>212</sup>), the main reason for the disastrous socialist experiment ceases to exist<sup>213</sup>. Consequently, it is also necessary to take into account that, by showing that distribution inequality does not vary with time and place, Pareto's law of income distribution refutes the socialists' claim that the capitalist system increases inequality, and therefore removes another argument in support of their proposal to change the system<sup>214</sup>. However, from the aforesaid law, Pareto takes, above all, the proposition (which is of a liberal-radical nature and probably synthesizes his concept of ideal political economy) that a necessary and sufficient condition to increase the minimum income and/or reduce the inequality of personal incomes is increasing the national income more than the population<sup>215</sup>.

#### 4.4 Thoughts on practical economic policies

Finally, from a reading of Pareto's correspondence one can extract a *corpus* of general positive reflections on the difficulties of practical economic policies.

Even though Pareto does not doubt, in the light of Darwin's studies, that the fight for existence is an “indispensable condition for the betterment of the living races”<sup>216</sup>, at first he believes that the goal of “every man who is good at heart” is to obtain the good of “most men, and of the most deserving ones among them”<sup>217</sup>, in the sense of minimizing the sufferings caused by such a fight (including Malthusian repressive brakes)<sup>218</sup>. Intuitively, the welfare of the people increases when the “wealth” produced increases and when the proportion of wealth wasted by the State (mainly in armaments) and by the “wealthy” (luxury expenses) decreases<sup>219</sup>. Once such wastes have been minimized, only poverty will remain. This is caused by reasons such as “a too rapid increase of the population, and the vices, weaknesses, physical and moral faults of men”, and these can only be remedied by educating the people—a task that can only be accomplished by private citizens<sup>220</sup>.

More precisely, however, in order to bring about social good, one has to assess the effects of each measure and, therefore, study them, irrespective of ideological considerations<sup>221</sup> and always taking into account that the complexity of social phenomena, of which only the direct effects are known to us<sup>222</sup>, makes it “very difficult” to say whether a single measure will do more harm than good<sup>223</sup>.



In this general picture, which is marked by a profound scepticism about the possibility for economic politics to be truly scientific, one can still find interesting considerations on various aspects of practical economic policies. These seem to Pareto to be characterized by two features. First is the frequent contrast made between the solution to the problem of obtaining popular consensus and the solution to the problem of obtaining the “greatest economic advantage”—a contrast that the government tries to hide from the public by resorting to arguments that are experimentally false (derivations), but make the two solutions look as if they were coinciding<sup>224</sup>. Second is the fact that government effectiveness consists in “knowing how to make use of existing sentiments and interests”<sup>225</sup>.

With regard to monetary policy, Pareto—who is a committed supporter of gold monometallism<sup>226</sup> (since bimetallism is a way “to steal from many for the benefit of few”<sup>227</sup>)—shares with Walras the idea that the function of monetary means can be carried out by gold and silver, provided that gold is the metal with the main role. Pareto and Walras part company when Walras proposes that the relationship between gold and silver be fixed by the State, because in Pareto’s opinion the ways the State has actually used this power have been catastrophic (i.e. inflationary)<sup>228</sup>. Similarly, Pareto believes that in order to ensure a “healthy” monetary circulation, it is necessary and sufficient that the State does not violate the private citizens’ freedom to accept or to reject the notes, irrespective of whether they are issued by one or more banks<sup>229</sup>.

With regard to taxation, Pareto thinks that what matters is not its legal form, but the quantity of the revenue<sup>230</sup> that the governments, held back only by the resistance opposed by the taxpayers, try to maximize<sup>231</sup> so as to spend it entirely “to pay their friends and to grease the politicians’ palm”<sup>232</sup>. Therefore, no fair tax system exists<sup>233</sup>. The best system is that of reducing taxes because, since the incentive to work increases when disposable income increases<sup>234</sup>, in many countries it is precisely the excessive tax levying that prevents “the betterment of the conditions of the people”<sup>235</sup>. In general, while political economy and the science of public finances both remain “very unscientific”, Pareto deems the delay to be greater for the latter because it is only the art of “putting to sleep” the taxpayers so that they may better be used as “food for a country’s rulers”<sup>236</sup>.

At any rate, from Pareto’s correspondence some analytical elements emerge of what he means as a scientific science of public finances. For instance, in order to compare the effects of an extraordinary tax with the effects of an alternative public loan, one must know the present and future effects that such measures have on the social and economic general equilibrium. The science of public finances “knows little” of the latter and ignores the former<sup>237</sup>, with the consequence that it replaces “real” effects with imaginary effects. The two aforesaid measures would produce different effects if at least some taxpayers received a greater or lesser amount as interests on the public loan than the amount they have paid as extraordinary tax, or if the sums received by the State for the two different reasons gave rise to alterations “of the use of the economic goods”<sup>238</sup>.

In reality, given that governments never repay the principal and pay the agreed interests only for a short time (in real terms), the loan is only one of the many subtle ways of “fleecing part of the population for the benefit of another part”. This will be useful or harmful to the country

according to whether or not it takes the country closer to the proportion of social classes, rentiers and speculators, “which gives the maximum utility” of the society<sup>239</sup>.

## 5. Conclusions

In order to reconstruct, even only partially, the thought of such a multifaceted, prolific and unsystematic author like Pareto, good philological practice suggests there is a need to take into account all of his writings, both public and private. The case study we have conducted seems to support this methodological indication.

Indeed, a reading of Pareto’s correspondence gives us various interesting indications on his epistemology, which is one of the many topics of his intellectual biography that have not as yet been treated in an altogether satisfactory manner. In Pareto’s correspondence we find the fundamental hubs of his conception of scientific knowledge, such as the purely relative and phenomenal character of it; the double nature (both causal and of interdependence) of phenomenal relationships; the repetitiveness of scientific work and therefore the predictability of its developments; as well as its irreversible incompatibility with metaphysics. According to Pareto, scientific research consists in making use of language as a simple but univocal way of labelling the phenomena; of mathematics, as a means to follow lines of reasoning that would be too complex to expound verbally; and, above all, of the experimental method, which consists in directly observing the phenomena. Such research arrives at identifying uniformities—that is simple concurrences of phenomena that make it possible, tautologically, to explain the phenomena in the very terms of their accompanying each other. The uniformities are expressed through hypothetical and descriptive propositions, and their truth is always provisional and can be refuted by reasoning and experimental proof.

It is within such a methodological grid that Pareto’s investigations on economic theory must be studied. His correspondence indeed allows one to see his interesting and detailed application of his own methodological options to the concept of final degrees of utility, which he ends up accepting only provisionally, since its properties of being continuous and decreasing are the object of rather significant experimental refutations. As the impossibility for utility to be measured gives pure economy a metaphysical foundation, in line with his own methodology, Pareto ends up abandoning that concept for the concept of line of indifference, which, according to him, is experimental and finally makes it possible to found a scientific economic theory.

The role of mathematics in such a theory is only justified by its being indispensable in the treatment of the GEE problem, which Pareto chose as the representation of the economic phenomenon, because it is the only one that can account for the main characteristic of the latter, namely the interdependence of its components. However, the further development of political economy requires that the study of economic phenomena be carried out by also taking into account social phenomena, according to a scientific approach that Pareto is, in his own opinion, among the first to cultivate.

By being more a result of the experimental than of the mathematical method, GEE is also the discriminating criterion, not only between literary and mathematical theories, but also, within these, between English mathematical economics (which in Pareto’s opinion is heuristically

sterile) and Lausanne mathematical economics. On the other hand, GEE is the only point Pareto has in common with Walras, from whom he is epistemologically poles apart, since his predecessor only deals with that which should be, whereas Pareto only studies that which is.

Pareto's reflection on economic theory appears to be mainly aimed at guiding his study of the political phenomenon, in a broad sense, and of the political-economic phenomenon, in a strict sense.

Pareto's correspondence makes it possible to follow down to the most minute detail the 25-year-long liberal and liberalist campaign that he conducted, and to note that the reason for its conclusion is the verification that it is interests and sentiments, and not scientific knowledge, that prompt people to action. In that period, Pareto also deeply involves himself in an important attempt to renew the theoretical foundations of liberalism, which, anyway, he only sees as the least negative economic system for contemporary civilization, and, all things considered, as yet to be built.

The related objections that Pareto raises against socialism are founded not on economic theory, but on the empirical argument that the statism foreseen by the socialists would lead to such an inefficient administration of the economic system that it would cause the death by starvation of vast numbers of human beings. Pareto is favourably inclined towards the possibility of a temporary alliance between liberalism and socialism, and against current bourgeois socialism—that is, against the use the bourgeoisie make of the State in favour of their own interests and to the detriment of the interests of the rest of the society.

The altogether limited knowledge one has of the social and economic phenomenon prevents the realization of scientific economic policies—of economic policies, that is, which show consistency between their goals and means. The considerations one can make on practical economic policies, particularly on taxation and monetary economic policies, can therefore only highlight the aforementioned serious damages that the government more or less knowingly causes to the social classes that do not support it.

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<sup>1</sup> Cf. Mincio D. - Mornati F. (1997), Melani L. (1983).

<sup>2</sup> Cf. the bibliography. A number of Pareto's letter-books also exist, preserved in a small Italian bank, which owns them. Unfortunately, only a very small fraction of them has been published and so far they are not easily accessible, cf. <http://www.popso.it/fondopareto/>

<sup>3</sup> Letters to Emilia Peruzzi of the 13<sup>th</sup> and 24<sup>th</sup> April 1874, *O.C. 27.1*, pp.342, 348.

<sup>4</sup> Letter to Alceste (not Antonio, as was long believed) Antonucci of the 7<sup>th</sup> December 1907, *O.C. 19.1*, p.613.

<sup>5</sup> Letters to Emilia Peruzzi of the 8<sup>th</sup> April and of the 17<sup>th</sup>, 18<sup>th</sup> June 1875, *O.C. 27.1*, pp.501, 515-516.

<sup>6</sup> Letter to Benedetto Croce of the 12<sup>th</sup> July 1902, *O.C. 19.1*, p.461.

<sup>7</sup> Letter to Antonio Graziadei of the 29<sup>th</sup> March 1901, *O.C. 19.1*, p.422.

<sup>8</sup> Letter to Maffeo Pantaleoni of the 28<sup>th</sup> May 1897, *O.C. 28.2*, p.77.

<sup>9</sup> Letters to Giovanni Vailati of the 23<sup>rd</sup> October 1902, *O.C. 19.1*, p.463 and to Guido Sensini of the 18<sup>th</sup>, 23<sup>rd</sup> February, 16<sup>th</sup> May 1907, *O.C. 19.1*, pp.590-591, 598.

<sup>10</sup> Letters to Benedetto Croce of the 24<sup>th</sup> December 1896, *O.C. 19.1*, p.317 and to Francesco Papafava of the 1<sup>st</sup> November 1907, *O.C. 30*, pp.461-462.

<sup>11</sup> Letter to Maffeo Pantaleoni of the 27<sup>th</sup> July 1892, *O.C. 28.1*, pp.256-257.

<sup>12</sup> Letter to Francesco Papafava of the 1<sup>st</sup> November 1907, *O.C. 30*, p.462.

<sup>13</sup> Letter to Benedetto Croce of the 27<sup>th</sup> May 1897, *O.C. 19.1*, p.341.

<sup>14</sup> Letters to Adrien Naville of the 23<sup>rd</sup> May 1905 and to Benedetto Croce of the 21<sup>st</sup> March 1906, *O.C. 19.1*, p.545-546, 563.

<sup>15</sup> Letters to Arturo Linaker of the 21<sup>st</sup> May 1921 and of the 6<sup>th</sup> July 1921, *O.C. 19.2*, pp.1065, 1067, and to Maffeo Pantaleoni of the 22<sup>nd</sup> May 1921, *O.C. 28.3*, p.283.

<sup>16</sup> Letter to Maffeo Pantaleoni of the 6<sup>th</sup> July 1892, *O.C. 28.1*, p.240.

<sup>17</sup> Letters to Maffeo Pantaleoni of the 25<sup>th</sup> January, 2<sup>nd</sup>, 7<sup>th</sup>, 9<sup>th</sup> February 1898, *O.C. 28.2*, pp.156, 159, 164, 167, and to Benedetto Croce of the 7<sup>th</sup> July, *O.C. 19.1*, p.391.

<sup>18</sup> Letter to Alfonso de Pietri Tonelli of the 8<sup>th</sup> August 1917, *O.C. 19.2*, p.978.

<sup>19</sup> Letters to Emilia Peruzzi of the 26<sup>th</sup> September 1872, *O.C. 27.1*, pp.43-45, to Benedetto Croce of the 27<sup>th</sup> May 1897, to Antonio Graziadei of the 29<sup>th</sup> March 1901, *O.C. 19.1* and to Giovanni Vailati of the 23<sup>rd</sup> October 1902, *O.C. 19.1*, pp.340, 422, 463.

<sup>20</sup> Letters to Léon Walras of the 28<sup>th</sup> April 1896, *O.C., 19.1*, pp.288-289, 291, 293 and to Adrien Naville of the 9<sup>th</sup> May 1917, *O.C. 19.2*, p.693.

<sup>21</sup> Letters to Arturo Linaker of the 7<sup>th</sup> October 1899, to Giuseppe Prezzolini of the 3<sup>rd</sup> March 1904, *O.C. 19.1*, pp.394-395, p.519 and to Maffeo Pantaleoni of the 7<sup>th</sup> March 1907, *O.C. 28.3*, p.17.

<sup>22</sup> Letters to Benedetto Croce of the 21<sup>st</sup> March 1906, *O.C. 19.1*, p.563 and to Felice Vinci of the 19<sup>th</sup> August 1912, *O.C. 19.2*, p.783.

<sup>23</sup> Letters to Maffeo Pantaleoni of the 22<sup>nd</sup> May and 3<sup>rd</sup> July 1892, of the 22<sup>nd</sup> July 1893, *O.C. 28.1*, pp.222, 237, 386, of the 14<sup>th</sup> September 1907, *O.C. 28.3*, p.55. and to Benedetto Croce of the 14<sup>th</sup> November 1912, *O.C. 19.2*, p.792.

<sup>24</sup> Letter to Arturo Linaker of the 7<sup>th</sup> October 1899, *O.C. 19.1*, p.395.

<sup>25</sup> Letter to Adrien Naville of the 7<sup>th</sup> May 1897, *O.C. 19.1*, pp.337-338.

<sup>26</sup> Letter to Maffeo Pantaleoni of the 2<sup>nd</sup> April 1907, *O.C., 28.3*, p.27.

<sup>27</sup> Letter to Emilia Peruzzi of the 26<sup>th</sup> September 1872, *O.C. 27.1*, pp.43-45.

<sup>28</sup> Letters to Adrien Naville of the 11<sup>th</sup> May 1897, to Benedetto Croce of the 27<sup>th</sup> May 1897, to Adrien Naville of the 13<sup>th</sup> December 1899 and to Antonio Graziadei of the 29<sup>th</sup> March 1901, *O.C., 19.1*, pp.337, 342, 396, 423.

<sup>29</sup> Letter to Adrien Naville of the 9<sup>th</sup> May 1917, *O.C. 19.2*, p.693.

<sup>30</sup> Letter to Antonio Graziadei of the 29<sup>th</sup> March 1901, *O.C., 19.1*, p.425.

<sup>31</sup> Letters to Giovanni Vailati of the 12<sup>th</sup> September 1896 and to Benedetto Croce of the 27<sup>th</sup> May, *O.C., 19.1*, pp.301, 343.

<sup>32</sup> Letters to Léon Walras of the 28<sup>th</sup> April 1896 and to Benedetto Croce of the 25<sup>th</sup> December 1898, *O.C., 19.1*, pp.291, 380.

<sup>33</sup> Letters to Giovanni Vailati of the 10<sup>th</sup> February 1897 and to Adrien Naville of the 7<sup>th</sup> May 1897, *O.C., 19.1*, pp.333, 336.

<sup>34</sup> Letter to Antonio Graziadei of the 29<sup>th</sup> March 1901, *O.C., 19.1*, p.425.

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- <sup>35</sup> Letters to Carlo Placci of the 30<sup>th</sup> December 1895, to Léon Walras of the 28<sup>th</sup> April 1896 and to Benedetto Croce of the 25<sup>th</sup> December, *O.C.*, 19.1, pp.281, 291, 380.
- <sup>36</sup> Letters to Maffeo Pantaleoni of the 31<sup>st</sup> May 1893, *O.C.*, 28.1, p.382, to Léon Walras of the 2<sup>nd</sup> August 1893, *O.C.*, 19.1, p.226 and to Maffeo Pantaleoni of the 28<sup>th</sup> July 1919, *O.C.*, 28.3, p.253.
- <sup>37</sup> Letter to Adrien Naville of the 13<sup>th</sup> December 1899, *O.C.*, 19.1, p.396.
- <sup>38</sup> Letter to Emilia Peruzzi of the 23<sup>rd</sup> June 1875, *O.C.*, 27.1, p.517.
- <sup>39</sup> Letter to Adrien Naville of the 13<sup>th</sup> December 1899, *O.C.*, 19.1, p.396.
- <sup>40</sup> Letter to Arturo Linaker of the 6<sup>th</sup> July 1921, *O.C.* 19.2, p.1069.
- <sup>41</sup> Letter to Léon Walras of the 28<sup>th</sup> April 1896, *O.C.* 19.1, p.291.
- <sup>42</sup> Letters to Emilia Peruzzi of the 30<sup>th</sup> October 1872, of the 5<sup>th</sup> February 1873 and of the 27<sup>th</sup> January 1874, *O.C.* 27.1, pp.58-59, 153, 313.
- <sup>43</sup> Letters to Adrien Naville of the 16<sup>th</sup> January and of the 11<sup>th</sup> May 1897, to Benedetto Croce of the 27<sup>th</sup> May 1897 and of the 7<sup>th</sup> July 1899 and to Arturo Linaker of the 7<sup>th</sup> October 1899, *O.C.* 19.1, pp.327-328, 337, 342, 389, 394.
- <sup>44</sup> Letters to Adrien Naville of the 13<sup>th</sup> December 1899 and to Antonio Graziadei of the 29<sup>th</sup> March 1901, *O.C.* 19.1, pp.396, 422.
- <sup>45</sup> Letters to Emilia Peruzzi of the 12<sup>th</sup> March 1874, *O.C.* 27.1, p.326, to Napoleone Colajanni of the 31<sup>st</sup> December 1891, to Léon Walras of the 5<sup>th</sup> March 1893, and to Alceste Antonucci of the 7<sup>th</sup> December 1907, *O.C.* 19.1, pp.176, 213, 614.
- <sup>46</sup> Letter to Alceste Antonucci of the 7<sup>th</sup> December 1907, *O.C.*, 19.1, p.614.
- <sup>47</sup> Letters to Emilia Peruzzi of the 10<sup>th</sup> February 1873, *O.C.* 27.1, p.165 and to Léon Walras of the 2<sup>nd</sup> August 1893, *O.C.*, 19.1, p.227.
- <sup>48</sup> Letter to Francesco Papafava of the 13<sup>th</sup> December 1888, *O.C.* 23, p.621.
- <sup>49</sup> to Francesco Papafava of the 27<sup>th</sup> November 1888, *O.C.* 23, p.589.
- <sup>50</sup> Letter to Francesco Papafava of the 2<sup>nd</sup> December, *O.C.* 23, p.592.
- <sup>51</sup> Letters to Maffeo Pantaleoni of the 7<sup>th</sup> October 1890, *O.C.* 28.1, pp.7-8, to Felice Cavallotti of the 21<sup>st</sup> October 1890, *O.C.* 19.1, p.146, to Luigi Bodio of the 20<sup>th</sup> April, *O.C.* 31, p.19.
- <sup>52</sup> Letter to Maffeo Pantaleoni of the 17<sup>th</sup> October 1890, *O.C.* 28.1, p.14.
- <sup>53</sup> Letters to Maffeo Pantaleoni of the 2<sup>nd</sup> May 1891, 22<sup>nd</sup> July 1893, *O.C.* 28.1, pp.33, 387.
- <sup>54</sup> Letters to Maffeo Pantaleoni of the 2<sup>nd</sup> May 1891 and of the 25<sup>th</sup> January 1893, *O.C.* 28.1, p.33, 338-340.
- <sup>55</sup> Letters to Maffeo Pantaleoni of the 1<sup>st</sup> and 4<sup>th</sup> January 1892, *O.C.* 28.1, pp.147-149.
- <sup>56</sup> Letters to Maffeo Pantaleoni of the 21<sup>st</sup> and 28<sup>th</sup> June 1891, *O.C.* 28.1, pp.37-38 and to Francesco Papafava of the 14<sup>th</sup> August, *O.C.* 30, p.167.
- <sup>57</sup> Letter to Maffeo Pantaleoni of the 8<sup>th</sup> July 1891, *O.C.* 28.1, p.49.
- <sup>58</sup> Letter to Maffeo Pantaleoni of the 8<sup>th</sup> July 1891, *O.C.* 28.1, pp.46-47.
- <sup>59</sup> Letter to Maffeo Pantaleoni of the 8<sup>th</sup> July 1891, *O.C.* 28.1, pp.46-49.
- <sup>60</sup> Letters to Maffeo Pantaleoni of the 26<sup>th</sup> May 1893 and of the 6<sup>th</sup> June 1896, *O.C.* 28.1, pp.375, 453.
- <sup>61</sup> Letter to Maffeo Pantaleoni of the 6<sup>th</sup> July 1891, *O.C.* 28.1, pp.42, 46.
- <sup>62</sup> Letters to Maffeo Pantaleoni of the 20<sup>th</sup> September and of the 9<sup>th</sup> December 1891, *O.C.* 28.1, pp.63, 109-110.
- <sup>63</sup> Letter to Léon Walras of the 21<sup>st</sup> September 1891, *O.C.* 19.1, p.167 and to Maffeo Pantaleoni of the 9<sup>th</sup> December 1891, *O.C.* 28.1, p.109.
- <sup>64</sup> Letters to Maffeo Pantaleoni of the 3<sup>rd</sup> October and of the 9<sup>th</sup> December 1891, *O.C.* 28.1, pp.66, 110.
- <sup>65</sup> Letter to Maffeo Pantaleoni of the 20<sup>th</sup> September 1891, *O.C.* 28.1, p.63.
- <sup>66</sup> Letter to Maffeo Pantaleoni of the 3<sup>rd</sup> October 1891, *O.C.* 28.1, p.67.
- <sup>67</sup> Letter to Maffeo Pantaleoni of the 3<sup>rd</sup> October 1891, *O.C.* 28.1, pp.65-66.
- <sup>68</sup> Letter to Maffeo Pantaleoni of the 9<sup>th</sup> December 1891, *O.C.* 28.1, pp.115-116.
- <sup>69</sup> Letter to Antonio Graziadei of the 29<sup>th</sup> March 1901, *O.C.* 19.1, p.423.
- <sup>70</sup> Letter to Antonio Graziadei of the 10<sup>th</sup> January 1901, *O.C.* 19.1, pp.419-421.
- <sup>71</sup> Letter to Giovanni Vailati of the 4<sup>th</sup> December 1901, *O.C.* 19.1, p.435.
- <sup>72</sup> Letters to Maffeo Pantaleoni of the 14<sup>th</sup> December 1898 and 28<sup>th</sup> December 1899, *O.C.* 28.2, pp.253, 287, 292.
- <sup>73</sup> Letters to Hermann Laurent of the 11<sup>th</sup> January 1899, *O.C.* 30, p.339 and to Maffeo Pantaleoni of the 28<sup>th</sup> December 1899, *O.C.* 28.2, pp.289-291.
- <sup>74</sup> Letters to Hermann Laurent of the 14<sup>th</sup> and 19<sup>th</sup> January 1899, *O.C.* 30, pp.339, 348-349 and to Maffeo Pantaleoni of the 23<sup>rd</sup> July 1900, *O.C.* 28.2, pp.323-324.
- <sup>75</sup> Letter to Maffeo Pantaleoni of the 30<sup>th</sup> December 1900, *O.C.* 28.2, p.348.
- <sup>76</sup> Letter to Hermann Laurent of the 19<sup>th</sup> January 1899, *O.C.* 30, p.349.

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- <sup>77</sup> Letters to Hermann Laurent of the 11<sup>th</sup> January 1899, *O.C.*, 30, p.339, to Maffeo Pantaleoni of the 24<sup>th</sup> October 1902, *O.C.* 28.2, p.409, to Vladimiro Furlan of the 28<sup>th</sup> September 1907, *O.C.* 19.1, p.607.
- <sup>78</sup> Letter to Maffeo Pantaleoni of the 28<sup>th</sup> December 1899, *O.C.* 28.2, p.293.
- <sup>79</sup> Letter to Maffeo Pantaleoni of the 28<sup>th</sup> December 1899, *O.C.* 28.2, p.288.
- <sup>80</sup> Letter to Luigi Amoroso of the 11<sup>th</sup> January 1909, *O.C.* 19.1, p.649.
- <sup>81</sup> Letter to Luigi Amoroso of the 7<sup>th</sup> January 1910, *O.C.* 19.2, p.685.
- <sup>82</sup> Letters to Guido Sensini of the 18<sup>th</sup> January 1905, *O.C.* 19.1, p.533 and to Hermann Laurent of the 7<sup>th</sup> January 1899, *O.C.* 30, p.337.
- <sup>83</sup> Letter to Felice Vinci of the 19<sup>th</sup> August 1912, *O.C.* 19.2, p.782.
- <sup>84</sup> Letter to Antonio Graziadei of the 10<sup>th</sup> January 1901, *O.C.* 19.1, pp.419-421.
- <sup>85</sup> Letter to Maffeo Pantaleoni of the 3<sup>rd</sup> October 1891, *O.C.* 28.1, p.67.
- <sup>86</sup> Letters to Maffeo Pantaleoni of the 10<sup>th</sup> February 1897, *O.C.* 28.2, p.30, to Wilhelm Franz Meyer of the 16<sup>th</sup> December 1901, to Maffeo Pantaleoni of the 15<sup>th</sup> September 1907, *O.C.* 28.3, p.61 and to Luigi Amoroso of the 21<sup>st</sup> April 1908, *O.C.* 19.1, pp.436, 630 and of the 28<sup>th</sup> November 1911, *O.C.* 19.2, p.745.
- <sup>87</sup> Letter to Maffeo Pantaleoni of the 19<sup>th</sup> February 1897, *O.C.* 28.2, p.35.
- <sup>88</sup> Letter to Alfonso de Pietri Tonelli of the 8<sup>th</sup> August 1917, *O.C.* 19.2, p.978.
- <sup>89</sup> Letters to Antonio Graziadei of the 29<sup>th</sup> March 1901, *O.C.*, 19.1, p.424 and to Maffeo Pantaleoni of the 15<sup>th</sup> September 1907, *O.C.* 28.3, p.61.
- <sup>90</sup> Letter to Alfonso de Pietri Tonelli of the 8<sup>th</sup> August 1917, *O.C.* 19.2, p.978.
- <sup>91</sup> Letter to Luigi Amoroso of the 28<sup>th</sup> November 1911, *O.C.* 19.2, p.745.
- <sup>92</sup> Letter to Pierre Boven of the 25<sup>th</sup> May 1912, *O.C.* 19.2, pp.769-770.
- <sup>93</sup> Letter to Léon Walras of the 15<sup>th</sup> March 1892, *O.C.* 19.1, p.183.
- <sup>94</sup> Letter to Maffeo Pantaleoni of the 5<sup>th</sup> January 1892, *O.C.* 28.1, pp.151-153.
- <sup>95</sup> Letter to Maffeo Pantaleoni of the 26<sup>th</sup> January 1892, *O.C.* 28.1, p.166.
- <sup>96</sup> Letter to Antonio Graziadei of the 29<sup>th</sup> March 1901, *O.C.*, 19.1, p.424.
- <sup>97</sup> Letters to Maffeo Pantaleoni of the 19<sup>th</sup> November, 28<sup>th</sup> December 1899, *O.C.* 28.2, pp.278-279, 287.
- <sup>98</sup> Letter to Maffeo Pantaleoni of the 23 July 1900, *O.C.* 28.2, p.324.
- <sup>99</sup> Letter to Vladimiro Furlan of the 11<sup>th</sup> October 1907, *O.C.* 19.1, pp.608-609.
- <sup>100</sup> Letter to Attilio Cabiati of the 13<sup>th</sup> February 1908, *O.C.* 19.1, p.624.
- <sup>101</sup> Letters to Irving Fisher of the 11<sup>th</sup> January 1897 and to Luigi Amoroso of the 11<sup>th</sup> January 1909, *O.C.* 19.1, pp.320, 322, 650.
- <sup>102</sup> Letter to Maffeo Pantaleoni of the 22<sup>nd</sup> June 1905, *O.C.* 28.2, p.444.
- <sup>103</sup> Letter to Luigi Amoroso of the 14<sup>th</sup> May 1907, *O.C.* 19.1, p.593.
- <sup>104</sup> Letter to Luigi Amoroso of the 14<sup>th</sup> May 1907, *O.C.* 19.1, p.594.
- <sup>105</sup> Letter to Luigi Amoroso of the 24<sup>th</sup> April 1909, *O.C.* 19.1, pp.661-660.
- <sup>106</sup> Letter to Maffeo Pantaleoni of the 14<sup>th</sup> August 1892, *O.C.*, 28.1, p.275.
- <sup>107</sup> Letter to Maffeo Pantaleoni of the 18<sup>th</sup> September 1892, *O.C.*, 28.1, pp.283-284.
- <sup>108</sup> Letter to Attilio Cabiati of the 13<sup>th</sup> February 1908, *O.C.* 19.1, p.626.
- <sup>109</sup> Letters to Giovanni Vailati of the 6<sup>th</sup> February 1908 and to Attilio Cabiati of the 13<sup>th</sup> February 1908, *O.C.* 19.1, pp.622, 626.
- <sup>110</sup> Letters to Tullio Martello of the 23<sup>rd</sup> June 1894 and of the 30<sup>th</sup> August 1906, *O.C.* 19.1, p.249, 572 and to Maffeo Pantaleoni of the 28<sup>th</sup> September 1907, *O.C.* 28.3, p.64.
- <sup>111</sup> Letter to Wilhelm Franz Meyer of the 16<sup>th</sup> December 1901, *O.C.* 19.1, p.439.
- <sup>112</sup> Letter to Maffeo Pantaleoni of the 17<sup>th</sup> June 1895, *O.C.* 28.1, p.417.
- <sup>113</sup> Letter to Wilhelm Franz Meyer of the 16<sup>th</sup> December 1901, *O.C.* 19.1, pp.440.
- <sup>114</sup> Letters to Antonio Graziadei of the 16<sup>th</sup> June 1901, *O.C.* 19.1, p.428, and to Domenico Berardi of the 18<sup>th</sup> and 29<sup>th</sup> August 1901, *O.C.*, 31, pp.136-137.
- <sup>115</sup> Letters to Maffeo Pantaleoni of the 18<sup>th</sup> May 1902, 22<sup>nd</sup> July 1904, *O.C.* 28.2, pp.403-404, 432.
- <sup>116</sup> Letters to Maffeo Pantaleoni of the 19<sup>th</sup> February 1897, *O.C.* 28.2, p.36, and to Felice Vinci of the 16<sup>th</sup> January 1912, *O.C.* 19.2, p.757.
- <sup>117</sup> Letters to Maffeo Pantaleoni of the 17<sup>th</sup> June and 9<sup>th</sup> July 1895, 6<sup>th</sup> June 1896, *O.C.* 28.1, pp.417, 423-424, 453-454, of the 10<sup>th</sup> February 1897, *O.C.* 28.2, pp.29-30 and of the 15<sup>th</sup>, 28<sup>th</sup> September 1907, *O.C.* 28.3, pp.61, 64.
- <sup>118</sup> Letter to Maffeo Pantaleoni of the 10<sup>th</sup> February 1897, *O.C.* 28.2, p.31.
- <sup>119</sup> Letters to Luigi Amoroso of the 21<sup>st</sup> April 1908, *O.C.* 19.1, p.630 and to Felice Vinci of the 16<sup>th</sup> January 1912, *O.C.* 19.2, pp.630, 757.

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- <sup>120</sup> Letters to Maffeo Pantaleoni of the 19<sup>th</sup> February 1897, *O.C.* 28.2, p.37 and to Felice Vinci of the 29<sup>th</sup> January 1912, *O.C.* 19.2, pp.758-759.
- <sup>121</sup> Letters to Emilia Peruzzi of the 30<sup>th</sup> April 1893, *O.C.* 27.1, p.547 and to Guido Martinelli of the 24<sup>th</sup> August 1894, *O.C.* 30, p.257.
- <sup>122</sup> Letter to Léon Walras of the 2<sup>nd</sup> August 1893, *O.C.* 19.1, p.226.
- <sup>123</sup> Letter to Léon Walras of the 12<sup>th</sup> September 1891, *O.C.* 19.1, pp.163-164.
- <sup>124</sup> Letters to Maffeo Pantaleoni of the 27<sup>th</sup> July 1892, of the 17<sup>th</sup> June and 9<sup>th</sup> July 1895, *O.C.* 28.1, pp.217, 417-418, 422-425, of the 10<sup>th</sup> and 19<sup>th</sup> February 1897, *O.C.* 28.2, pp.31, 35 and to Guido Sensini of the 8<sup>th</sup> August 1911, *O.C.* 19.2, p.735.
- <sup>125</sup> Letters to Léon Walras of the 15<sup>th</sup> March 1892, *O.C.* 19.1, pp.183-184 and to Maffeo Pantaleoni of the 13<sup>th</sup> January 1894, *O.C.* 28.1, p.412.
- <sup>126</sup> Letters to Léon Walras of the 20<sup>th</sup> March 1892, *O.C.* 19.1, p.184 and to Maffeo Pantaleoni of the 20<sup>th</sup> and 28<sup>th</sup> March, 18<sup>th</sup> September 1892, of the 22<sup>nd</sup> and 26<sup>th</sup> May 1893, *O.C.*, 28.1, pp.197, 200, 287, 373, 375-378.
- <sup>127</sup> Letter to Léon Walras of the 30<sup>th</sup> July 1893, *O.C.* 19.1, p.225.
- <sup>128</sup> Letter to Léon Walras of the 12<sup>th</sup> August 1893, *O.C.* 19.1, p.228.
- <sup>129</sup> Letter to Léon Walras of the 15<sup>th</sup> March 1892, *O.C.* 19.1, p.183.
- <sup>130</sup> Letter to Guido Sensini of the 8<sup>th</sup> August 1911, *O.C.* 19.2, p.735.
- <sup>131</sup> Letter to Maffeo Pantaleoni of the 19<sup>th</sup> December 1908, *O.C.* 28.3, p.121.
- <sup>132</sup> Letter to Adrien Naville of the 7<sup>th</sup> May 1897, *O.C.* 19.1, p.338.
- <sup>133</sup> Letters to Maffeo Pantaleoni of the 26<sup>th</sup>, 28<sup>th</sup> May 1893, *O.C.* 28.1, pp.379-380, of the 19<sup>th</sup> December 1908, *O.C.* 28.3, p.121.
- <sup>134</sup> Letters to Maffeo Pantaleoni of the 26<sup>th</sup> and 31<sup>st</sup> May 1893, *O.C.* 28.1, pp.378, 382, of the 17<sup>th</sup> May 1893, *O.C.* 28.2, pp.73, of the 19<sup>th</sup> December 1908, *O.C.* 28.3, p.121 and to Guido Sensini of the 16<sup>th</sup> February 1911, *O.C.* 19.2, pp.735-736.
- <sup>135</sup> Letter to Adrien Naville of the 7<sup>th</sup> May 1897, *O.C.* 19.1, p.336.
- <sup>136</sup> Letter to Adrien Naville of the 7<sup>th</sup> May 1897, *O.C.* 19.1, p.334.
- <sup>137</sup> Letters to Maffeo Pantaleoni of the 19<sup>th</sup> December 1908, 27<sup>th</sup> September 1909, *O.C.* 28.3, pp.121, 144.
- <sup>138</sup> Letter to Guido Sensini of the 8<sup>th</sup> August 1911, *O.C.* 19.2, p.735.
- <sup>139</sup> Letter to Maffeo Pantaleoni of the 19<sup>th</sup> February 1897, *O.C.* 28.2, p.36.
- <sup>140</sup> Letter to Alfonso de Pietri-Tonelli of the 14<sup>th</sup> March 1914, *O.C.* 19.2, p.863.
- <sup>141</sup> Letters to Maffeo Pantaleoni of the 10<sup>th</sup> February 1897, *O.C.*, 28.2, pp.32-33, of the 13<sup>th</sup> October 1907, *O.C.* 28.3, p.68, to Alfonso de Pietri-Tonelli of the 14<sup>th</sup> March 1914 and to Luigi Amoroso of the 17<sup>th</sup> April 1914, *O.C.* 19.2, pp.863, 867-868.
- <sup>142</sup> Letter to Maffeo Pantaleoni of the 15<sup>th</sup> March 1907, *O.C.*, 28.3, p.23.
- <sup>143</sup> Letter to Maffeo Pantaleoni of the 15<sup>th</sup> March 1907, *O.C.*, 28.3, pp.22-24.
- <sup>144</sup> Letters to Maffeo Pantaleoni of the 17<sup>th</sup> May, 11<sup>th</sup> November 1897, 5<sup>th</sup> February 1898, 24<sup>th</sup>, 26<sup>th</sup> October 1902, *O.C.*, 28.2, pp.73, 121, 163, 407-408, 413-414, of the 2<sup>nd</sup> May 1918, *O.C.*, 28.3, p.231.
- <sup>145</sup> Letter to Adrien Naville of the 11<sup>th</sup> January 1897, *O.C.* 19.1, p.325.
- <sup>146</sup> Letter to Adrien Naville of the 11<sup>th</sup> May 1897, *O.C.* 19.1, p.339.
- <sup>147</sup> Letter to Adrien Naville of the 11<sup>th</sup> May 1897, *O.C.* 19.1, p.339.
- <sup>148</sup> Letter to Emanuele Sella of the 11<sup>th</sup> June 1913, *O.C.* 19.2, p.832.
- <sup>149</sup> Letters to Maffeo Pantaleoni of the 9<sup>th</sup> December 1906, *O.C.*, 28.2, p.465, to Emanuele Sella of the 11<sup>th</sup> June 1913 and to James Harvey Rogers of the 7<sup>th</sup> April 1916, *O.C.* 19.2, pp.833, 922.
- <sup>150</sup> Letter to Alceste Antonucci of the 7<sup>th</sup> December 1907, *O.C.* 19.1, p.613.
- <sup>151</sup> Letters to Emilia Peruzzi of the 20<sup>th</sup> August 1873 and of the 27<sup>th</sup> January 1874, *O.C.* 27.1, pp.254, 313, of the 8<sup>th</sup> March 1888, *O.C.* 27.2, p.375 and to Guido Martinelli of the 14<sup>th</sup> August 1892, *O.C.* 30, p.164.
- <sup>152</sup> Letters to Emilia Peruzzi of the 30<sup>th</sup> April 1886, *O.C.* 27.2, p.323, to Carlo Placci of the 25<sup>th</sup> August 1898, *O.C.* 27.1, p.370.
- <sup>153</sup> Letter to Emilia Peruzzi of the 5<sup>th</sup> November 1872, *O.C.* 27.1, p.73.
- <sup>154</sup> Letter to Emilia Peruzzi of the 20<sup>th</sup> August 1873, *O.C.* 27.1, p.255.
- <sup>155</sup> Letters to Emilia Peruzzi of the 20<sup>th</sup> and 24<sup>th</sup> August 1874, *O.C.* 27.1, pp.398, 401.
- <sup>156</sup> Letter to Emilia Peruzzi of the 27<sup>th</sup> October 1874, *O.C.* 27.1, pp.444-445.
- <sup>157</sup> Letter to Maffeo Pantaleoni of the 23<sup>rd</sup> April 1893, *O.C.* 28.1, p.369.
- <sup>158</sup> Letters to Emilia Peruzzi of the 8<sup>th</sup> August 1885, *O.C.* 27.2, pp.301, 304-305 and to Maffeo Pantaleoni of the 1<sup>st</sup> August and 27<sup>th</sup> December 1897, 2<sup>nd</sup>, 3<sup>rd</sup>, 11<sup>th</sup>, 17<sup>th</sup> February 1898, *O.C.* 28.2, pp.96, 137, 160-161, 171, 173-174.

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- <sup>159</sup> Letter to Maffeo Pantaleoni of the 17<sup>th</sup> February 1892, *O.C.*, 28.1, p.185.
- <sup>160</sup> Letters to Maffeo Pantaleoni of the 23<sup>rd</sup> February and 27<sup>th</sup> July 1892, *O.C.*, 28.1, pp.189, 255.
- <sup>161</sup> Letter to Luigi Ridolfi of the 9<sup>th</sup> March 1887, *O.C.* 23, p.571.
- <sup>162</sup> Letters to Emilia Peruzzi of the 8<sup>th</sup> March and of the 11<sup>th</sup> May 1888, *O.C.* 27.2, pp.375, 378-379.
- <sup>163</sup> Letter to Emilia Peruzzi of the 17<sup>th</sup> November 1888, *O.C.* 27.2, p.388.
- <sup>164</sup> Letter to Francesco Papafava of the 6<sup>th</sup> January 1891, *O.C.* 30, p.112.
- <sup>165</sup> Letters to Léon Walras of the 23<sup>rd</sup> July and 12<sup>th</sup> September 1891, *O.C.* 19.1, pp.160, 163 and to Emilia Peruzzi of the 26<sup>th</sup> August 1891, *O.C.* 27.2, pp.481-482.
- <sup>166</sup> Letters to Maffeo Pantaleoni of the 18<sup>th</sup> August and 17<sup>th</sup> September 1891, *O.C.* 28.1, pp.57, 61, to Léon Walras of the 18<sup>th</sup> August and 6<sup>th</sup> September 1891, *O.C.* 19.1, pp.161-163, to Emilia Peruzzi of the 26<sup>th</sup> August 1891, *O.C.* 27.2, pp.481-482, to Philippe Monnier of the 22<sup>nd</sup> September 1891, *O.C.* 19.1, p.168 and to Paul Speiser of the 30<sup>th</sup> September 1891, *O.C.* 30, p.140.
- <sup>167</sup> Letters to Francesco Papafava of the 27<sup>th</sup> November 1888, *O.C.* 23, p.590 and of the 17<sup>th</sup> January 1891, *O.C.* 30, p.125.
- <sup>168</sup> Letter to Francesco Papafava of the 2<sup>nd</sup> December 1888, *O.C.* 23, p.591.
- <sup>169</sup> Letter to Francesco Papafava of the 2<sup>nd</sup> December 1888, *O.C.* 23, p.593.
- <sup>170</sup> Letter to Maffeo Pantaleoni of the 11<sup>th</sup> November 1893, *O.C.* 28.1, p.400.
- <sup>171</sup> Letter to Giovanni Vailati of the 2<sup>nd</sup> November 1896, *O.C.* 19.1, p.305.
- <sup>172</sup> Letters to Teodoro Moneta of the 2<sup>nd</sup> May 1893, *O.C.*, 31, p.57, Guido Martinelli of the 24<sup>th</sup> May and 9<sup>th</sup> December 1893, of the 29<sup>th</sup> March 1895, *O.C.* 30, pp.189, 211, 268, to Maffeo Pantaleoni of the 25<sup>th</sup> November 1893, *O.C.*, 28.1, p.404, and to Carlo Placci of the 28<sup>th</sup> May 1894, *O.C.* 19.1, p.246.
- <sup>173</sup> Letters to Emilia Peruzzi of the 13<sup>th</sup> June 1891, *O.C.* 27.2, p.474-475 and to Maffeo Pantaleoni of the 18<sup>th</sup> August 1891, *O.C.* 28.1, p.56.
- <sup>174</sup> Letters to Maffeo Pantaleoni of the 7<sup>th</sup> October 1891, *O.C.* 28.1, p.76 and to Carlo Placci of the 9<sup>th</sup> February 1894, *O.C.* 19.1, p.239.
- <sup>175</sup> Letters to Maffeo Pantaleoni of the 30<sup>th</sup> April, 11<sup>th</sup> and 20<sup>th</sup> May, 22<sup>nd</sup> December 1896, *O.C.* 28.1, pp.442, 444, 449, 500, of the 11<sup>th</sup>, 22<sup>th</sup> February, 16<sup>th</sup> May 1898, *O.C.* 28.2, pp.171, 175-176, 196.
- <sup>176</sup> Letters to Benedetto Croce of the 21<sup>st</sup> January 1898, *O.C.* 19.1, p.358, to Maffeo Pantaleoni of the 21<sup>st</sup> November, 7<sup>th</sup> December 1899, 18<sup>th</sup> July 1901, *O.C.*, 28.2, pp.281, 284, 432, to Arturo Linaker of the 18<sup>th</sup> October 1900 and to Arcangelo Ghisleri of the 18<sup>th</sup> September 1901, *O.C.* 19.1, pp.412, 432.
- <sup>177</sup> Letters to Maffeo Pantaleoni of the 17<sup>th</sup>, 22<sup>nd</sup> February 1898, *O.C.*, 28.2, pp.174, 177, to Filippo Turati of the 16<sup>th</sup> September 1898 and of the 5<sup>th</sup> March 1899 and to Arturo Linaker of the 24<sup>th</sup> September 1903, *O.C.* 19.1, pp.377-378, 382, 496.
- <sup>178</sup> Letter to Alceste Antonucci of the 7<sup>th</sup> December 1907, *O.C.* 19.1, p.614.
- <sup>179</sup> Letters to Maffeo Pantaleoni of the 22<sup>nd</sup> February 1905, *O.C.*, 28.2, p.436, of the 7<sup>th</sup> March and 25<sup>th</sup> April 1907, *O.C.*, 28.3, pp.18, 38, to Alceste Antonucci of the 7<sup>th</sup> December 1907, *O.C.* 19.1, p.615.
- <sup>180</sup> Letters to Arturo Linaker of the 18<sup>th</sup> October 1900 and to Arcangelo Ghisleri of the 18<sup>th</sup> September 1901, *O.C.* 19.1, pp.412, 432.
- <sup>181</sup> Letters to Maffeo Pantaleoni of the 3<sup>rd</sup> July 1902, *O.C.*, 28.2, pp.405-406, to Giuseppe Prezzolini of the 17<sup>th</sup> December 1903 and to Carlo Placci of the 4<sup>th</sup> June 1904 *O.C.* 19.1, pp.507, 513.
- <sup>182</sup> Letters to Teodoro Moneta of the 27<sup>th</sup> March 1898, *O.C.* 31, p.113, to Emanuele Sella of the 11<sup>th</sup> June 1913, *O.C.* 19.2, p.832 and to Maffeo Pantaleoni of the 26<sup>th</sup> October 1907, 7<sup>th</sup> August and 10<sup>th</sup> December 1916, *O.C.*, 28.3, pp.70-71, 192, 198, 252.
- <sup>183</sup> Letter to Francesco Papafava of the 23<sup>rd</sup> February 1889, *O.C.* 23, p.631.
- <sup>184</sup> Letters to Maffeo Pantaleoni of the 20<sup>th</sup> and 26<sup>th</sup> March 1891, *O.C.* 28.1, pp.21-23, 25-27.
- <sup>185</sup> Letters to Maffeo Pantaleoni of the 18<sup>th</sup> September, 21<sup>st</sup> and 23<sup>rd</sup> October 1892, *O.C.*, 28.1, pp.285, 302-303.
- <sup>186</sup> Letters to Francesco Papafava of the 14<sup>th</sup> August 1892, *O.C.* 30, p.165 and to Emilia Peruzzi of the 22<sup>nd</sup> February 1894, *O.C.* 27.2, pp.564-569.
- <sup>187</sup> Letter to Francesco Papafava of the 14<sup>th</sup> August 1892, *O.C.* 30, p.165.
- <sup>188</sup> Letters to Maffeo Pantaleoni of the 19<sup>th</sup> May and of the 12<sup>th</sup> August 1892, *O.C.* 28.1, pp.218, 268-269 and to Guido Martinelli of the 17<sup>th</sup> September 1893, *O.C.* 30, p.202.
- <sup>189</sup> Letter to Léon Walras of the 12<sup>th</sup> September 1891, *O.C.* 19.1, p.164.
- <sup>190</sup> Letter to Maffeo Pantaleoni of the 6<sup>th</sup> December 1891, *O.C.* 28.1, pp.98-99.
- <sup>191</sup> Letter to Carlo Placci of the 9<sup>th</sup> July 1900, *O.C.* 19.1, p.402.
- <sup>192</sup> Letter to Luigi Bodio of the 4<sup>th</sup> January 1893, *O.C.* 31, pp.40, 49.



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- <sup>193</sup> Letter to Carlo Placci of the 30<sup>th</sup> December 1895, *O.C. 19.1*, p.281.
- <sup>194</sup> Letter to Léon Walras of the 20<sup>th</sup> July 1894, *O.C. 19.1*, p.250.
- <sup>195</sup> Letter to Léon Walras of the 23<sup>rd</sup> July 1894, *O.C. 19.1*, p.251.
- <sup>196</sup> Letter to Benedetto Croce of the 30<sup>th</sup> June 1899, *O.C. 19.1*, pp.387-388.
- <sup>197</sup> Letter to Carlo Placci of the 28<sup>th</sup> May 1894, *O.C. 19.1*, pp.246-247.
- <sup>198</sup> Letters to Emilia Peruzzi of the 11<sup>th</sup> October 1892, *O.C. 27.2*, pp.517-518, to Teodoro Moneta of the 29<sup>th</sup> May 1894, *O.C. 31*, p. 80, and to Carlo Placci of the 30<sup>th</sup> December 1895, *O.C. 19.1*, pp.281-282.
- <sup>199</sup> Letter to Léon Walras of the 28<sup>th</sup> April 1896, *O.C. 19.1*, p.290.
- <sup>200</sup> Letter to Carlo Placci of the 30<sup>th</sup> December 1895, *O.C. 19.1*, pp.281-282.
- <sup>201</sup> Pareto's deposition, of the 7<sup>th</sup> January 1880, to the parliamentary Commission of Inquiry on the operation of the Italian railways, *O.C. 23*, pp.196-197.
- <sup>202</sup> Letter to Maffeo Pantaleoni of the 16<sup>th</sup> March 1893, *O.C. 28.1*, p.427.
- <sup>203</sup> Letter to Léon Walras of the 28<sup>th</sup> April 1896, *O.C. 19.1*, p.287.
- <sup>204</sup> Letter to Francesco Papafava of the 3<sup>rd</sup> December 1888, *O.C. 30*, p.596.
- <sup>205</sup> Letters to Napoleone Colajanni of the 31<sup>st</sup> December 1891, of the 2<sup>nd</sup> January and 27<sup>th</sup> March 1893, *O.C. 19.1*, pp.176, 207, 216, to Maffeo Pantaleoni of the 7<sup>th</sup> March 1893, *O.C. 28.1*, pp.352-353, Teodoro Moneta of the 9<sup>th</sup> June 1896, *O.C. 31*, p.94.
- <sup>206</sup> Letter to Francesco Papafava of the 9<sup>th</sup> December 1888, *O.C. 30*, pp.603-604, to Maffeo Pantaleoni of the 20<sup>th</sup>, 22<sup>nd</sup> July 1898, 19<sup>th</sup>, 21<sup>st</sup> November, 7<sup>th</sup> December 1899, 30<sup>th</sup> June 1901, 1<sup>st</sup> April 1905, *O.C. 28.2*, pp.223-224, 227-228, 278, 282, 284, 366-367, 442.
- <sup>207</sup> Letters to Francesco Papafava of the 9<sup>th</sup> December 1888, *O.C. 30*, pp.616-621, to Guido Martinelli of the 30<sup>th</sup> January 1895, *O.C. 30*, p.266, to Maffeo Pantaleoni of the 19<sup>th</sup> December 1896, *O.C. 28.1*, p.498, of the 1<sup>st</sup> August 1897, *O.C. 28.2*, p.96.
- <sup>208</sup> Letter to Léon Walras of the 28<sup>th</sup> April 1896, *O.C. 19.1*, p.292.
- <sup>209</sup> Letters to Napoleone Colajanni of the 5<sup>th</sup> May 1892 and 14<sup>th</sup> January 1898, *O.C. 19.1*, pp.187, 357, to Francesco Papafava of the 9<sup>th</sup> January 1894, *O.C.*, 30, p.215, to Léon Walras of the 28<sup>th</sup> April 1896 and to Adrien Naville of the 1<sup>st</sup> July 1899, *O.C. 19.1*, pp.289-292, 388-389.
- <sup>210</sup> Letters to Filippo Turati of the 11<sup>th</sup> November 1893 and to Carlo Placci of the 9<sup>th</sup> February 1894, *O.C. 19.1*, pp.235, 238, 240.
- <sup>211</sup> Letter to Carlo Placci of the 15<sup>th</sup> November 1895, *O.C. 19.1*, p.269.
- <sup>212</sup> Letter to Carlo Placci of the 30<sup>th</sup> December 1895, *O.C. 19.1*, p.281.
- <sup>213</sup> Letter to Carlo Placci of the 15<sup>th</sup> November 1895, *O.C. 19.1*, pp.269-270.
- <sup>214</sup> Letter to Gustave de Molinari of the 18<sup>th</sup> November 1896, *O.C. 19.1*, p.307.
- <sup>215</sup> Letter to Maffeo Pantaleoni of the 14<sup>th</sup> July 1896, *O.C. 28.1*, p.461.
- <sup>216</sup> Letter to Francesco Papafava of the 2<sup>nd</sup> December 1888, *O.C. 23*, p.593.
- <sup>217</sup> Letters to Francesco Papafava of the 2<sup>nd</sup> December 1888, *O.C. 23*, p.591 and to Maffeo Pantaleoni of the 22<sup>nd</sup> December 1891, *O.C.*, 28.1, p.122.
- <sup>218</sup> Letters to Francesco Papafava of the 2<sup>nd</sup> and 3<sup>rd</sup> December 1888, *O.C. 23*, pp.594-596.
- <sup>219</sup> Letter to Francesco Papafava of the 4<sup>th</sup> December 1888, *O.C. 23*, pp.599-600.
- <sup>220</sup> Letter to Francesco Papafava of the 10<sup>th</sup> December 1888, *O.C. 23*, pp.610-611.
- <sup>221</sup> Letters to Francesco Papafava of the 2<sup>nd</sup> December 1888, *O.C. 23*, p.591 and to Léon Walras of the 28<sup>th</sup> April 1896, *O.C. 19.1*, pp.292-293.
- <sup>222</sup> Letter to Alceste Antonucci of the 7<sup>th</sup> December 1907, *O.C. 19.1*, p.615.
- <sup>223</sup> Letter to Carlo Placci of the 10<sup>th</sup> June 1897, *O.C. 19.1*, p.344.
- <sup>224</sup> Letter to Maffeo Pantaleoni of the 24<sup>th</sup> June 1920, *O.C. 28.3*, p.267.
- <sup>225</sup> Letter to Maffeo Pantaleoni of the 1<sup>st</sup> October 1921, *O.C. 28.3*, pp.294-295.
- <sup>226</sup> Letter to Maffeo Pantaleoni of the 9<sup>th</sup> August 1892, *O.C. 28.1*, pp.264-265.
- <sup>227</sup> Letter to Maffeo Pantaleoni of the 8<sup>th</sup> November 1897, *O.C. 28.2*, p.115.
- <sup>228</sup> Letters to Léon Walras of the 2<sup>nd</sup> August 1893 and to Carlo Placci of the 30<sup>th</sup> December 1895, *O.C. 19.1*, pp.226-227, 281.
- <sup>229</sup> Letter to Maffeo Pantaleoni of the 20<sup>th</sup> December 1892, *O.C. 28.1*, p.329.
- <sup>230</sup> Letters to Napoleone Colajanni of the 12<sup>th</sup> and 24<sup>th</sup> December 1893, *O.C. 19.1*, pp.236-237.
- <sup>231</sup> Letter to Edwin Robert Anderson Seligman of the 5<sup>th</sup> January 1896, *O.C. 19.1*, p.282.
- <sup>232</sup> Letters to Edwin Robert Anderson Seligman of the 5<sup>th</sup> January and 1<sup>o</sup> March 1896, *O.C. 19.1*, pp.282, 284, and to Benvenuto Griziotti of the 2<sup>nd</sup> September 1917, *O.C. 19.2*, p.984.

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<sup>233</sup> Letters to Maffeo Pantaleoni of the 12<sup>th</sup> August 1892, *O.C.* 28.1, p.267 and of the 21<sup>st</sup> December 1897, *O.C.* 28.2, pp.133-134.

<sup>234</sup> Letter to Maffeo Pantaleoni of the 24<sup>th</sup> November 1898, *O.C.* 28.2, pp.249-252.

<sup>235</sup> Letter to Léon Walras of the 28<sup>th</sup> April 1896, *O.C.* 19.1, p.290.

<sup>236</sup> Letters to Guido Sensini and to Tullio Martello of the 5<sup>th</sup> April 1917, *O.C.* 19.2, pp.958-959.

<sup>237</sup> Letter to Guido Sensini of the 3<sup>rd</sup> September 1917, *O.C.* 19.2, p.985.

<sup>238</sup> Letter to Benvenuto Griziotti of the 2<sup>nd</sup> September 1917, *O.C.* 19.2, p.984.

<sup>239</sup> Letter to Benvenuto Griziotti of the 5<sup>th</sup> October 1917, *O.C.* 19.2, p.989.